

# Reducing Diesel Emissions



Walsh Construction

# Walsh Retrofit Experience

- 2004 IEPA/IDOT Pilot Program
  - Torrance Ave/I-94 Interchange IDOT Project
  - 3 Month Duration – Fuel Monitoring/Emissions Calculations
  - Limited Retrofits with DOC's/On-Road Fuel
    - Equipment Retrofitted with Nett Technologies Catalytic Mufflers
      - (2) Volvo L120 Loaders
      - (1) Deere 750 Dozer
      - (1) Dynapac CA251 Roller
    - Total Cost, installed, per machine \$1500-\$2500, HP dependent
    - Fuel use was recorded, and emissions reductions calculated
    - DOC's were removed after project completion





12/10/2004

# Walsh Retrofit Experience

- 2005 IDOT Projects – Dan Ryan/Kingery
  - ULSD or DOC Retrofits with Low Sulfur Fuel Only
    - 50-300 HP Rating – 30 Consecutive Day Duration
    - Cost Analysis Process
      - Retrofit Total Cost vs. Fuel Price Difference
        - Retrofit Cost dependent on HP of engine, DOC type and supplier selected
        - Fuel Costs estimated by duration on project, total number of hours and manufacture handbook fuel consumption data
  - Retrofits
    - Lubrizol “Canister Type” Converters
    - Lower price than Muffler replacements, wider availability
    - Configuration/Retrofit Concerns
    - (2) IMT/CAT 320B Crane Rigs (since removed) (\$1200) (151HP)
    - (2) Linkbelt 138H Cranes (still active) (\$1500) (207 HP)
    - (1) Volvo L120D Loader (still active) (\$1500) (205HP)











# Walsh Retrofit Experience

## Key Issues when Retrofitting

- Involve OEM's/ Engine Manufacturers/Dealers
  - Limits on exhaust back pressure and flow
  - DOC supplier choice and specifications
    - Is an OEM Brand Available?
    - Or OEM preferred third party
    - Type/Installation/Configuration Issues
  - Recommended Installation Procedures/Location
  - DOC Manufacturer Guidelines
  - Documentation, Documentation, Documentation
- Maintenance after installation
  - Baseline Back pressure check/Periodic Monitoring
  - Check for recommended Exhaust Temperature
  - Performance/Awareness by Operator(s) and job staff
  - Oil Sampling Practice
  - Periodic Cleaning?



# Walsh Retrofit Experience

- 2005 IDOT Projects – Dan Ryan/Kingery
  - Fuel Administration
    - External Identification of proper fuel (decals)
    - Accurate Fuel Consumption Logs
    - Fuel Supplier Involvement
      - Bar Coding or other Data Capture Method
      - Process to ensure correct fuel is dispensed
      - Logistically Capable?
        - Dedicated trucks for ULSD (surcharge?)
        - Capable of delivering all fuel types, minimal trucks
        - Off – Road Conditions/Job Site Access
      - Access to Data (website or electronic file)
    - Bulk Storage/Company owned fuel trucks





# Walsh Retrofits 2006 Dan Ryan

- Current Project Underway rebuilding Express Lanes
- Sub-Contractor has decided to Retrofit with DOCs
- Expected heavy utilization (24 hr/6 Day) justify expense
- 19 Units being retrofitted with Nett DOC Muffler Replacement
  - Deere 450C Model Excavators (8) (\$3800) (316HP)
  - Deere 844J Model Front End Loaders (3) (\$3800) (330HP)
  - Deere 850/750J Model Dozers (4) (\$2400)
  - Bomag 211D Model Rollers (4) (\$2000)
- Local Deere Dealer purchased and installed in field
  - Sent Nett sample OEM mufflers for exact replicate
  - Retrofits have gone smoothly
  - Obtained baseline readings for backpressure
  - Periodic Monitoring/Oil Samples/Performance



**LOW SULFUR  
DIESEL  
FUEL  
ONLY**

**ULTRA LOW  
SULFUR  
DIESEL  
ONLY**



**THIS MACHINE IS  
EQUIPPED WITH AN**

**AIR  
POLLUTION  
CONTROL  
DEVICE**









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